CLAIMS

1. A recording medium having recorded thereon a video stream and a graphics stream, wherein:

the video stream represents a moving picture made up of a plurality of pictures;

the graphics stream is used for overlaying a menu on the moving picture, and includes interactive control information and graphics data;

the graphics data is used for generating both the menu and an effect presented for introducing or removing the menu;

the interactive control information includes a plurality of pieces of composition information defining a sequence of display compositions of graphics constituting the effect; and

each piece of composition information shows (i) a bounding area on a graphics plane within which a respective display composition is rendered and (ii) a duration after which the display composition is replaced by a subsequent display composition to be rendered within the same bounding area.

2. The recording medium according to Claim 1, wherein:

a size of the bounding area is 1/x of the entire graphics plane; and

a value of the duration shown by the composition information is calculated by multiplying y by a display duration of each picture of the moving picture.

3. The recording medium according to Claim 1, wherein the duration is determined based on a value calculated by dividing the size of the bounding area by a transfer rate of a playback apparatus.

5   4. The recording medium according to Claim 1, wherein:

the graphics stream includes one or more pieces of pallet data;

the interactive control information includes a plurality of pieces of page information each defining a page of the menu
10 available for presentation; and

each piece of page information includes a pallet ID uniquely identifying a piece of pallet data to be used for presentation of a respective page.

15 5. The recording medium according to Claim 1, wherein:

when the effect is an in-effect to be presented preceding the menu, a set of graphics data associated with the in-effect is located in a string of the graphics data before a set of graphics data associated with the menu;
20 the interactive control information is encapsulated in a packet; and

a timestamp attached to the packet shows a time for starting playback of the in-effect.

25 6. A playback apparatus used for playing back a video stream and a graphics stream, comprising:

a video decoder operable to decode the video stream to obtain

a moving picture;

a graphics plane; and

a graphics decoder operable to decode the graphics stream
to obtain uncompressed graphics on the graphics plane, so as

5   to overlay the graphics on the moving picture, wherein:

the graphics stream includes graphics data and interactive
control information;

the interactive control information includes a plurality
of pieces of composition information defining a sequence of

10 display compositions of graphics constituting an effect;

each piece of composition information shows (i) a bounding
area on the graphics plane within which a respective display
composition is rendered and (ii) a duration after which the
display composition is to be replaced by a subsequent display

15 composition to be rendered in the same bounding area;

the graphics decoder includes

a composition buffer operable to store the interactive
control information,

a processor operable to decode the graphics data

20 included in the graphics stream, and

a   controller   operable   to   assemble   display
compositions according to the composition information when
uncompressed graphics are newly obtained by the processor, so
as to play back the effect overlaid on the moving picture; and

25   the controller assembles a menu using uncompressed graphics
obtained by the processor, so as to present the menu overlaid
on the moving picture preceding or following playback of the

effect.

7. The playback apparatus according to Claim 6, wherein each time a set of uncompressed graphics is obtained, the controller

5   renders the obtained set of graphics within the bounding area on the graphics plane for a duration shown by the composition information.

8. The playback apparatus according to Claim 7, wherein:

10   the graphics decoder includes an object buffer operable to store uncompressed graphics obtained by the processor; and

        the duration shown by the composition information is based on a value calculated by dividing a size of the bounding area on the graphics plane by a transfer rate at which uncompressed

15   graphics are transferred from the object buffer to the graphics plane.

9. The playback apparatus according to Claim 6, wherein:

        the uncompressed graphics obtained by the processor are

20   expressed in code values;

        the playback apparatus further comprises a look-up table unit operable to convert each code value to a pixel value;

        the graphics stream includes one or more pieces of pallet data;

25   the interactive control information includes a plurality of pieces of page information each defining a page of the menu available for presentation;

each page information includes a pallet ID uniquely

identifying a piece of pallet data to be referenced when

presenting a respective page; and

when presenting a page, the controller instructs the look-up

5   table unit to perform the conversion to pixel values using a

piece of pallet data identified by a pallet ID associated with

the page.

10. The playback apparatus according to Claim 6, wherein:

10   when the effect is an in-effect to be presented preceding

the menu, a set of graphics data associated with the in-effect

is located in a string of the graphics data before a set of graphics

data associated with the menu;

the interactive control information is encapsulated in a

15   packet; and

the controller starts playback of the in-effect when a

playback of the video stream reaches a point shown by the timestamp

attached to the packet.

20   11. A method for recording onto a recording medium, comprising:

generating application data; and

recording the application data onto the recording medium,

wherein:

the application data includes a video stream and a graphics

25   stream;

the graphics stream is used for overlaying a menu on the

moving picture, and includes interactive control information

and graphics data;

   the graphics data is used for generating both the menu and an effect presented for introducing or removing the menu;

   the interactive control information includes a plurality

5 of pieces of composition information defining a sequence of display compositions of graphics constituting the effect; and

   each piece of composition information shows (i) a bounding area on a graphics plane within which a respective display composition is rendered and (ii) a duration after which the

10 display composition is replaced by a subsequent display composition to be rendered within the same bounding area.

12. A program used for enabling a computer to play back a video stream and a graphics stream, comprising:

15   code operable to cause the computer to decode the video stream to obtain a moving picture; and

   code operable to cause the computer to decode the graphics stream to obtain uncompressed data on a graphics plane for overlaying on the moving picture, wherein:

20   the graphics stream includes graphics data and interactive control information;

   the interactive control information includes a plurality of pieces of composition information defining a sequence of display compositions of graphics constituting an effect;

25   each piece of composition information shows (i) a bounding area on the graphics plane within which a respective display composition is rendered and (ii) a duration after which the

display composition is to be replaced by a subsequent display

composition to be rendered in the same bounding area; and

the code operable to cause the computer to decode the

graphics stream includes code operable to cause the computer

5   to assemble a display composition according to the composition

information each time a set of uncompressed graphics is obtained,

so that the set of uncompressed graphics is rendered within the

specified bounding area on the graphics plane for the specified

duration.

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13. A method for playing back a video stream and graphics stream,

comprising:

decoding the video stream to obtain a moving picture; and

decoding the graphics stream to obtain graphics on a

15   graphics plane, so as to overlay the graphics on the moving picture,

wherein

the graphics stream includes graphics data and interactive

control information;

the interactive control information includes a plurality

20   of pieces of composition information defining a sequence of

display compositions of graphics constituting an effect;

each piece of composition information shows (i) a bounding

area on the graphics plane within which a respective display

composition is rendered and (ii) a duration after which the

25   display composition is to be replaced by a subsequent display

composition to be rendered in the same bounding area; and

the decoding of the graphics stream includes assembling

a display composition according to the composition information each time a set of uncompressed graphics is obtained, so that the set of uncompressed graphics is rendered within the specified bounding area on the graphics plane for the specified duration.